The Pit and the Pendulum

On Behalf of

U.S. Department of Energy
Acquisition and Project Management Workshop

By: Anirban Basu
Sage Policy Group, Inc.

March 25th, 2015

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Dawn of the Dead

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Real GDP Growth, 20 Fastest and Slowest Growing Countries

Projected 2014, Annual Percent Change (for available nations)

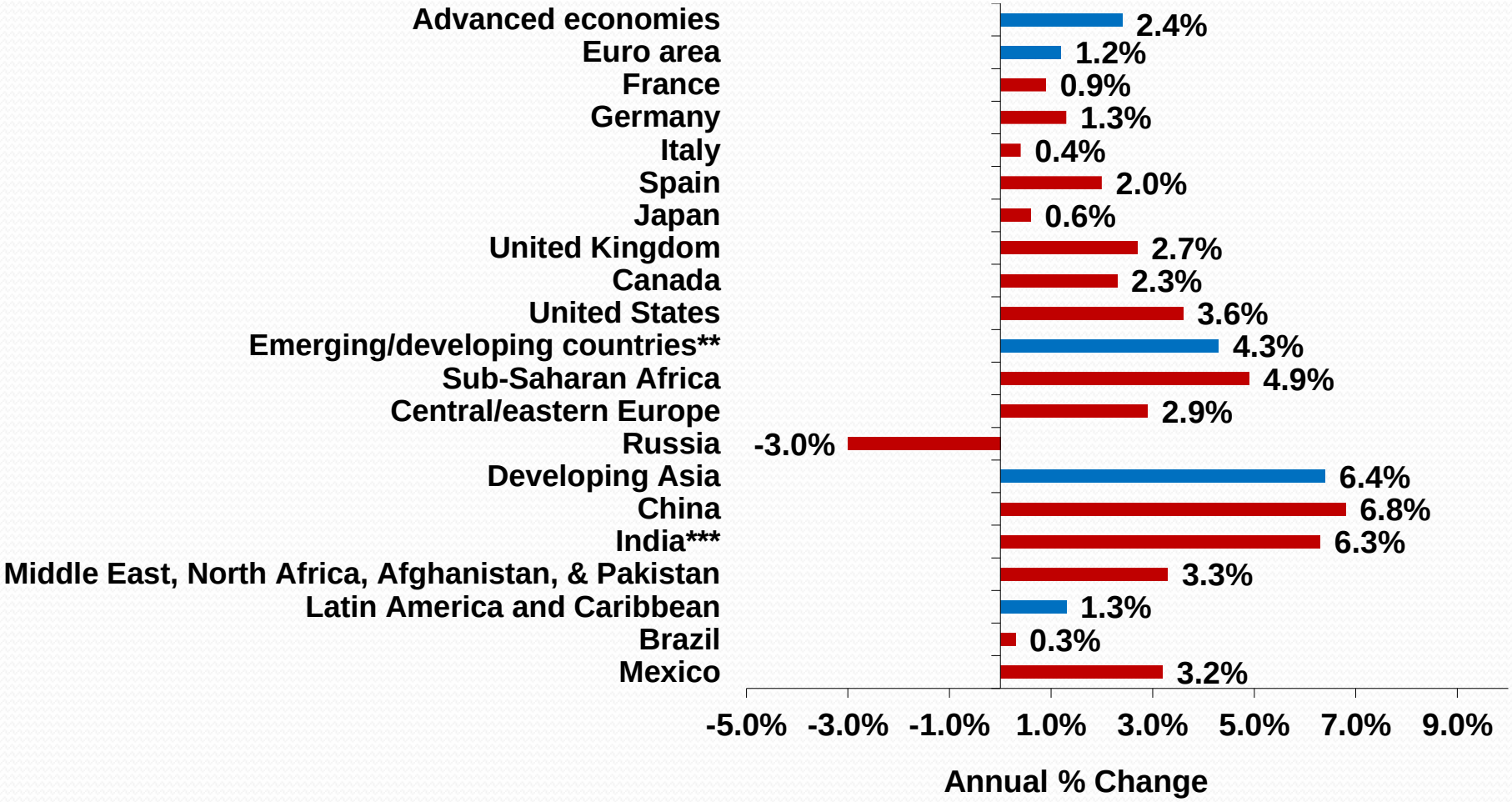
Rank	Country	Region	%
1	Turkmenistan	Central Asia	10.1
2	Chad	Africa	9.6
3	Mongolia	Asia	9.1
4	Democratic Republic of the Congo	Africa	8.6
5	Côte d'Ivoire	Africa	8.5
6	Myanmar	Southeast Asia	8.5
7	Mozambique	Africa	8.3
8	Ethiopia	Africa	8.2
9	Sierra Leone	Africa	8.0
10	China	Asia	7.4
11	Lao P.D.R.	Southeast Asia	7.4
12	The Gambia	Africa	7.4
13	Tanzania	Africa	7.2
14	Cambodia	Southeast Asia	7.2
15	Uzbekistan	Central Asia	7.0
16	Sri Lanka	Southeast Asia	7.0
17	Nigeria	Africa	7.0
18	Mauritania	Africa	6.8
19	Burkina Faso	Africa	6.7
20	Panama	Central America	6.6

Rank	Country	Region	%
169	Netherlands	Europe	0.6
170	France	Europe	0.4
171	Brazil	South America	0.3
172	Russia	Eastern Europe	0.2
173	Solomon Islands	Pacific Islands	0.1
174	San Marino	Europe	0.0
175	Italy	Europe	-0.2
176	Finland	Northern Europe	-0.2
177	Serbia	Eastern Europe	-0.5
178	Barbados	Caribbean	-0.6
179	Croatia	Eastern Europe	-0.8
180	St. Lucia	Caribbean	-1.1
181	Argentina	South America	-1.7
182	Equatorial Guinea	Africa	-2.5
183	Iraq	Middle East	-2.7
184	Venezuela	South America	-3.0
185	Cyprus	Europe	-3.2
186	Ukraine	Eastern Europe	-6.5
187	South Sudan	Africa	-12.3
188	Libya	Middle East	-19.8

Source: International Monetary Fund, October 2014 WEO Database

Estimated Growth in Output by Select Global Areas

*2015 Projected**



Source: International Monetary Fund, January 2015 WEO Update

**Real effective exchange rates are assumed to remain constant at the levels prevailing during December 8, 2014–January 5, 2015.*
***The quarterly estimates and projections account for approximately 80 percent of the emerging market and developing economies.*
****For India, data and forecasts are presented on a fiscal year basis and output growth is based on GDP at market prices. Corresponding growth rates for GDP at factor cost are 5.6 and 6.3 percent for 2014/15 and 2015/16, respectively.*

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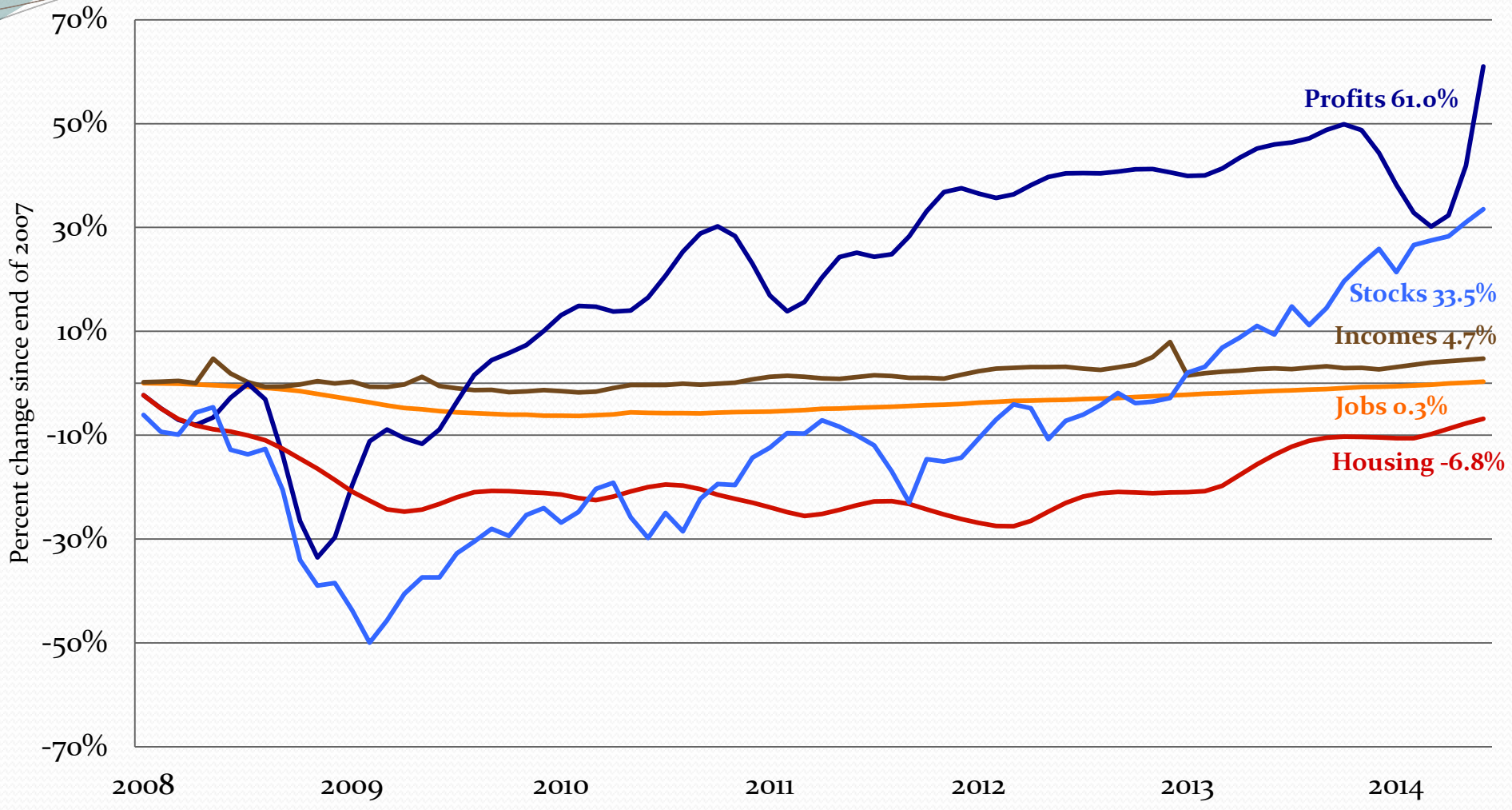
What Lies Beneath



Source: BEA, BLS, S&P Case-Shiller, Yahoo! Finance

**Through June 2014*

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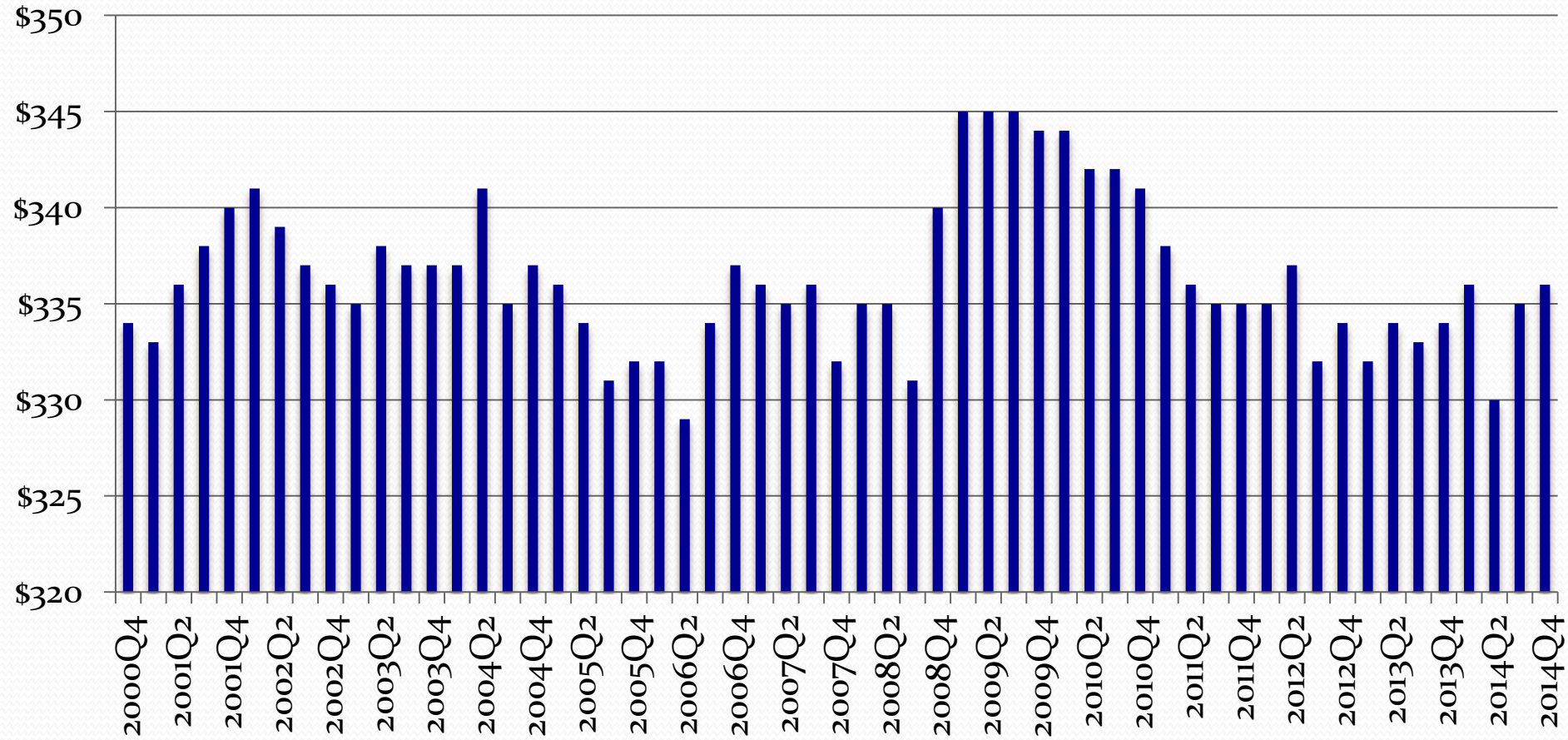
Median Weekly Earnings, Full-Time U.S. Workers*

2000Q4 through 2014Q4



Source: U.S. Bureau of Labor Statistics

*SA, Constant 1982-1984 dollars (adjusted to CPI-U)
Wage and salary workers ages 16+

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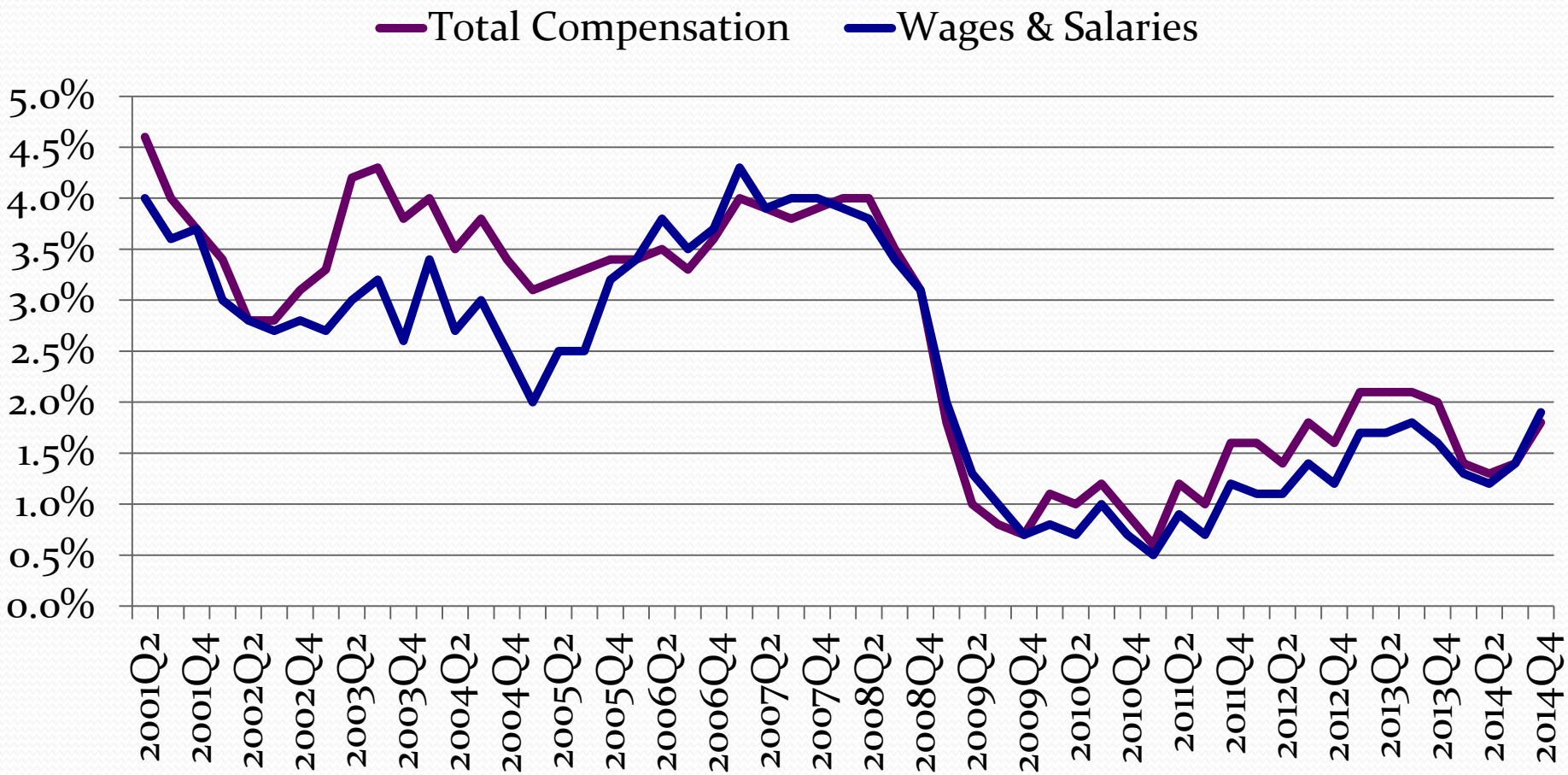
Construction Employment Cost Index

12-Month Percent Change (NSA)



Source: Bureau of Labor Statistics

*Private industry workers in construction.
Total compensation includes wages, salaries, and employer costs for employee benefits.

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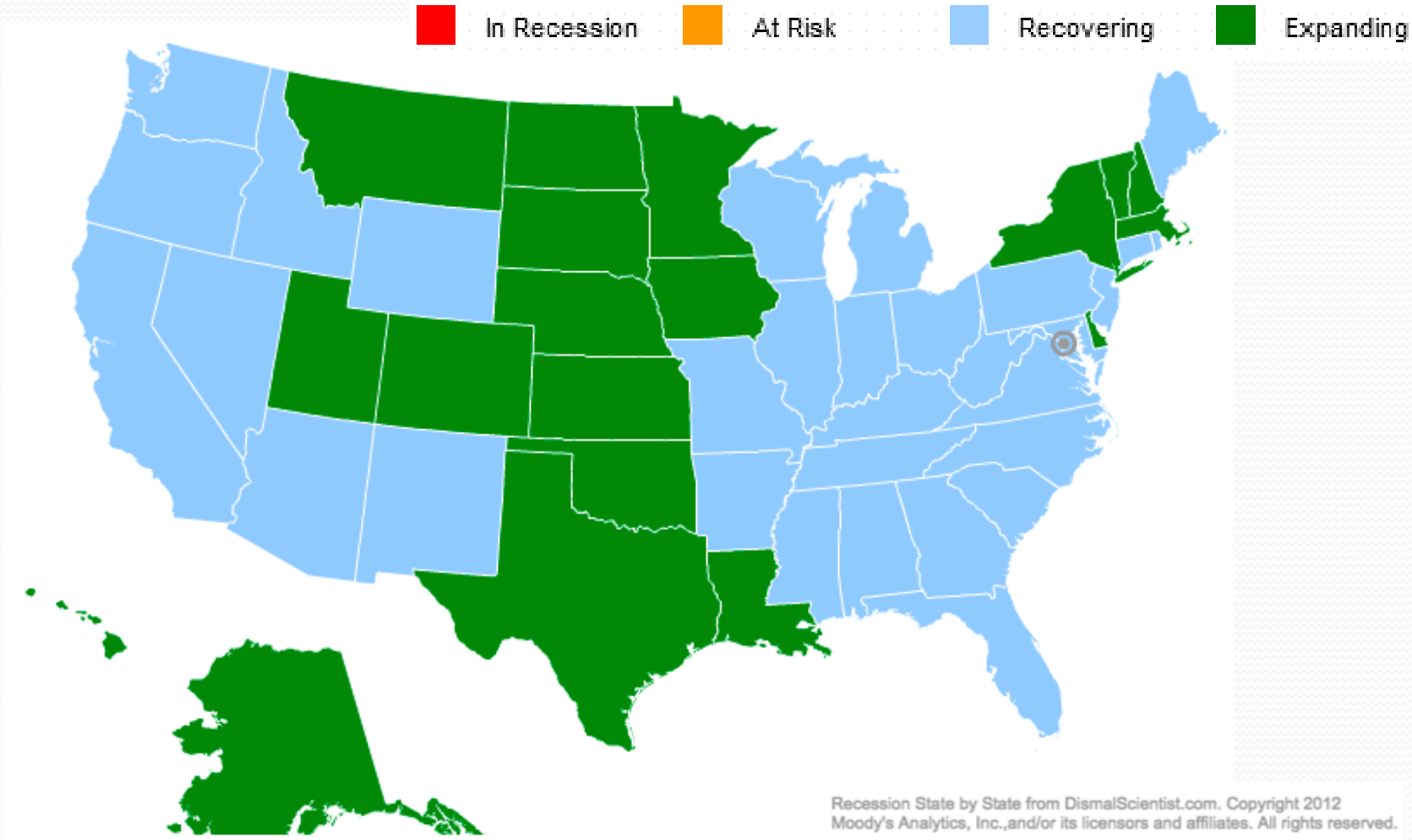
Recession Watch

as of December 2014



Source: Moody's Economy

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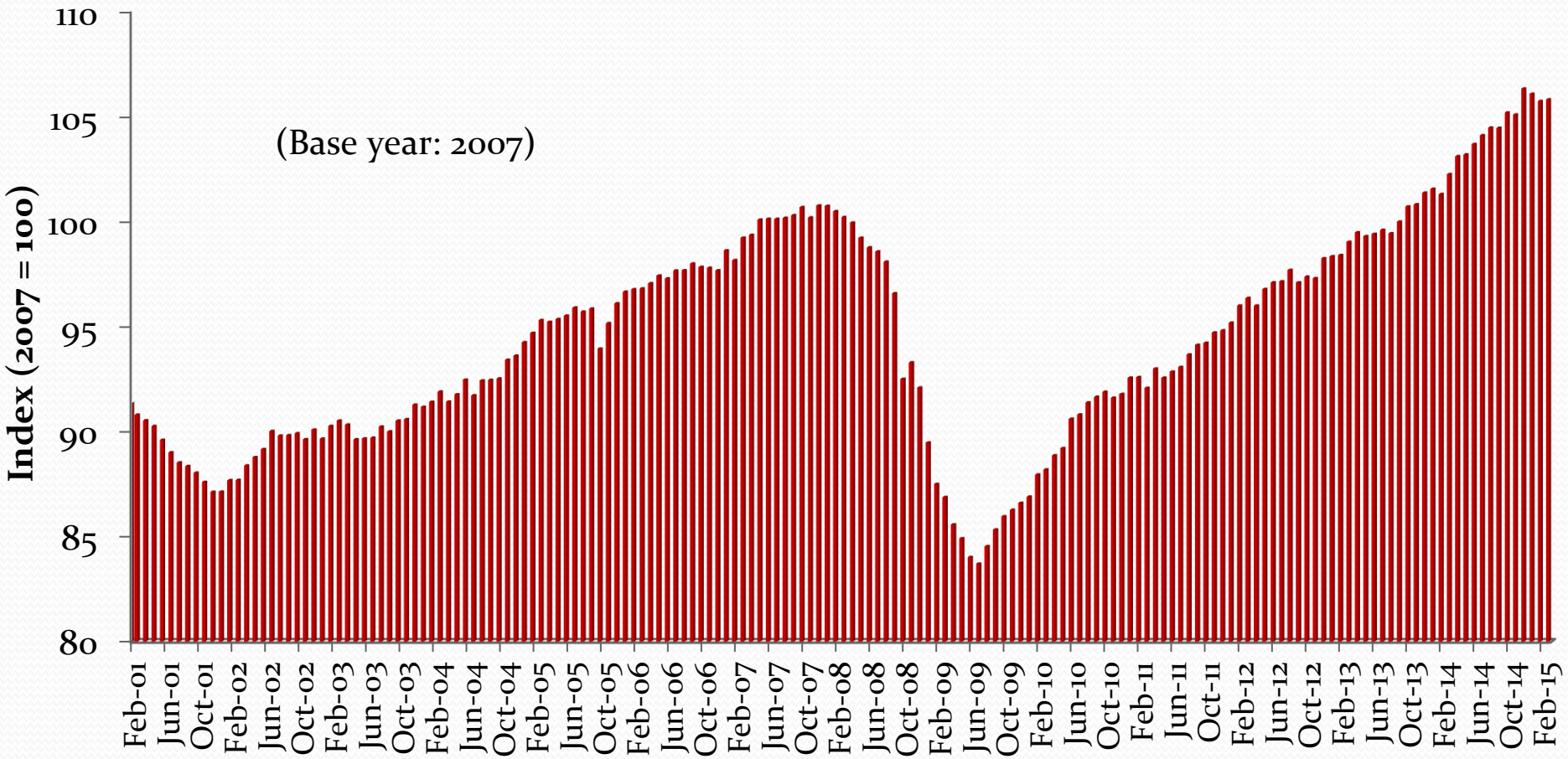
Industrial Production

February 2001 through February 2015



Source: Federal Reserve

The industrial production index measures the real output of the manufacturing, mining, and electric and gas utilities industries.

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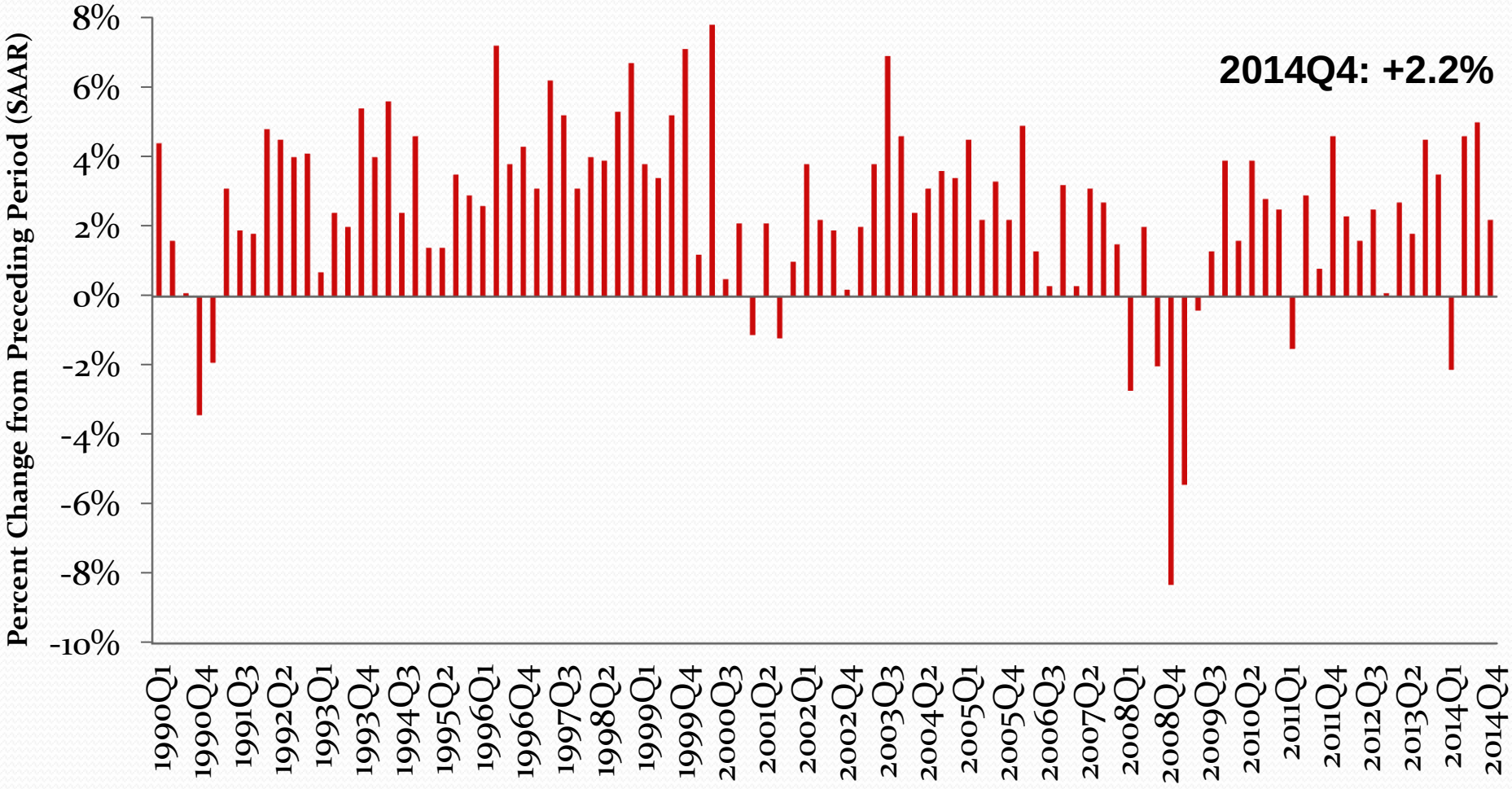
Gross Domestic Product

*1990Q1 through 2014Q4**



Source: Bureau of Economic Analysis

*2nd estimate

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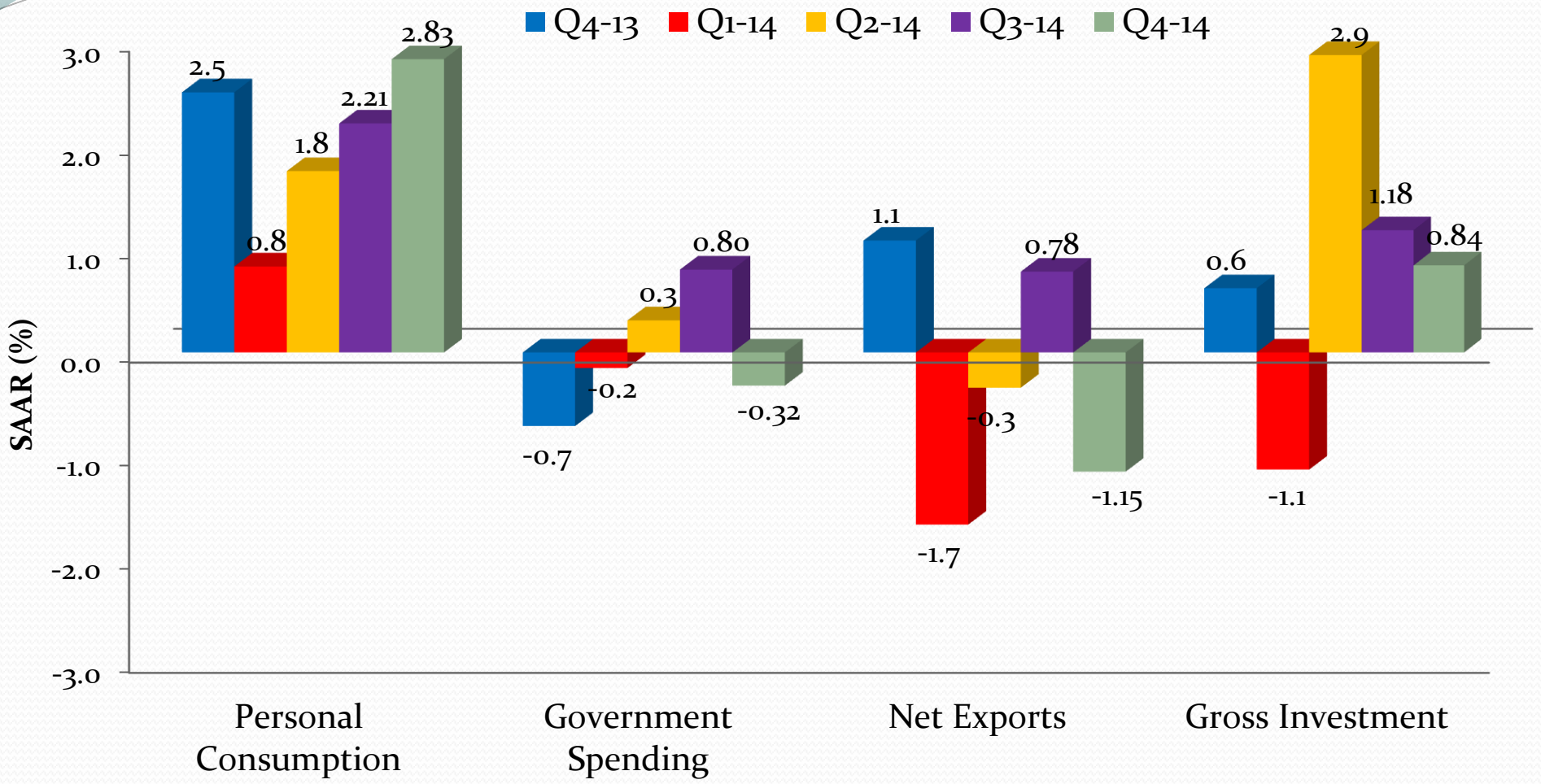
Contributions to GDP Growth by Component

*2013Q4 – 2014Q4**



Source: Bureau of Economic Analysis

*2nd estimate

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Invasion of the Body Snatchers

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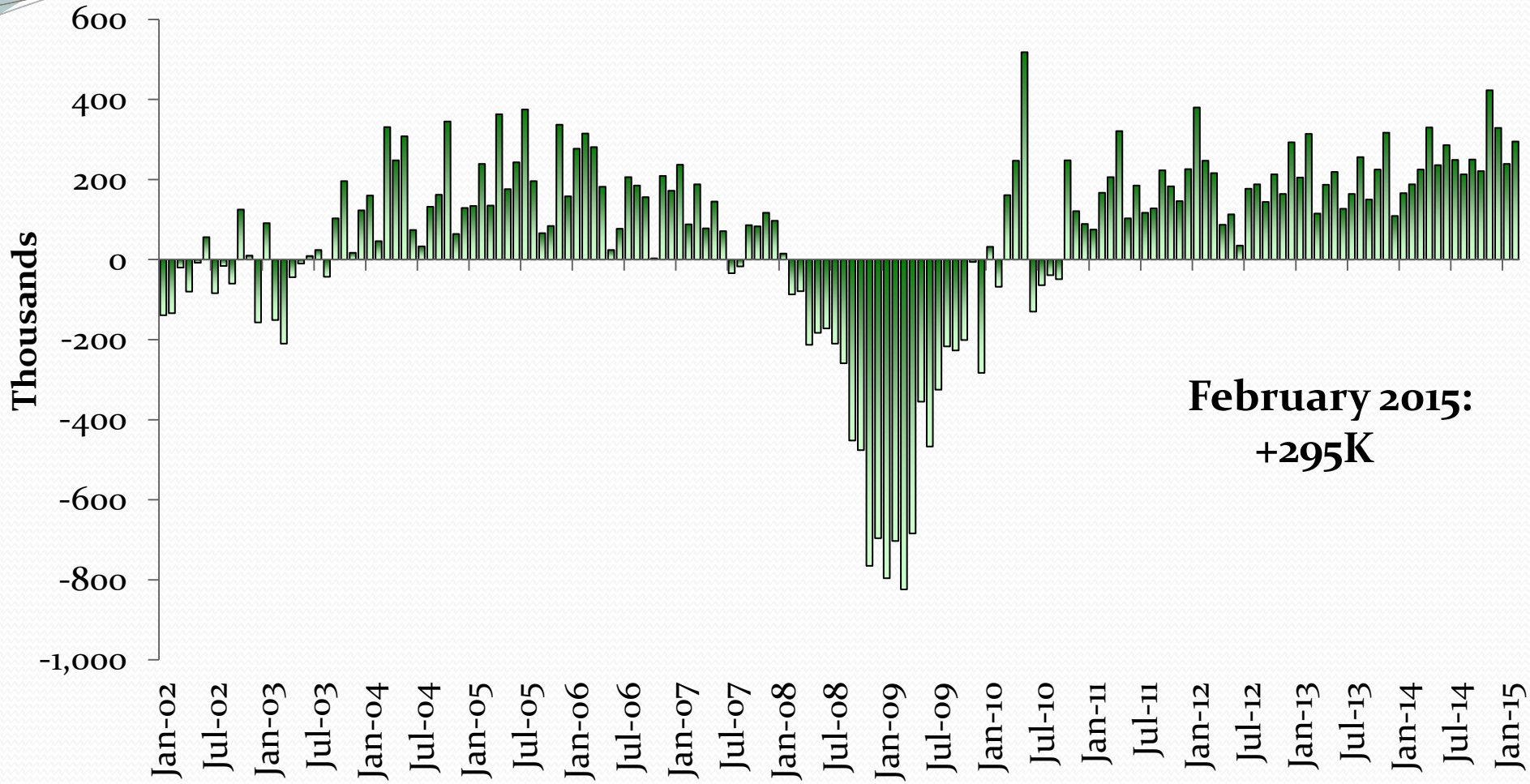
Net Change in U.S. Jobs, BLS

January 2002 through February 2015



Source: U.S. Bureau of Labor Statistics

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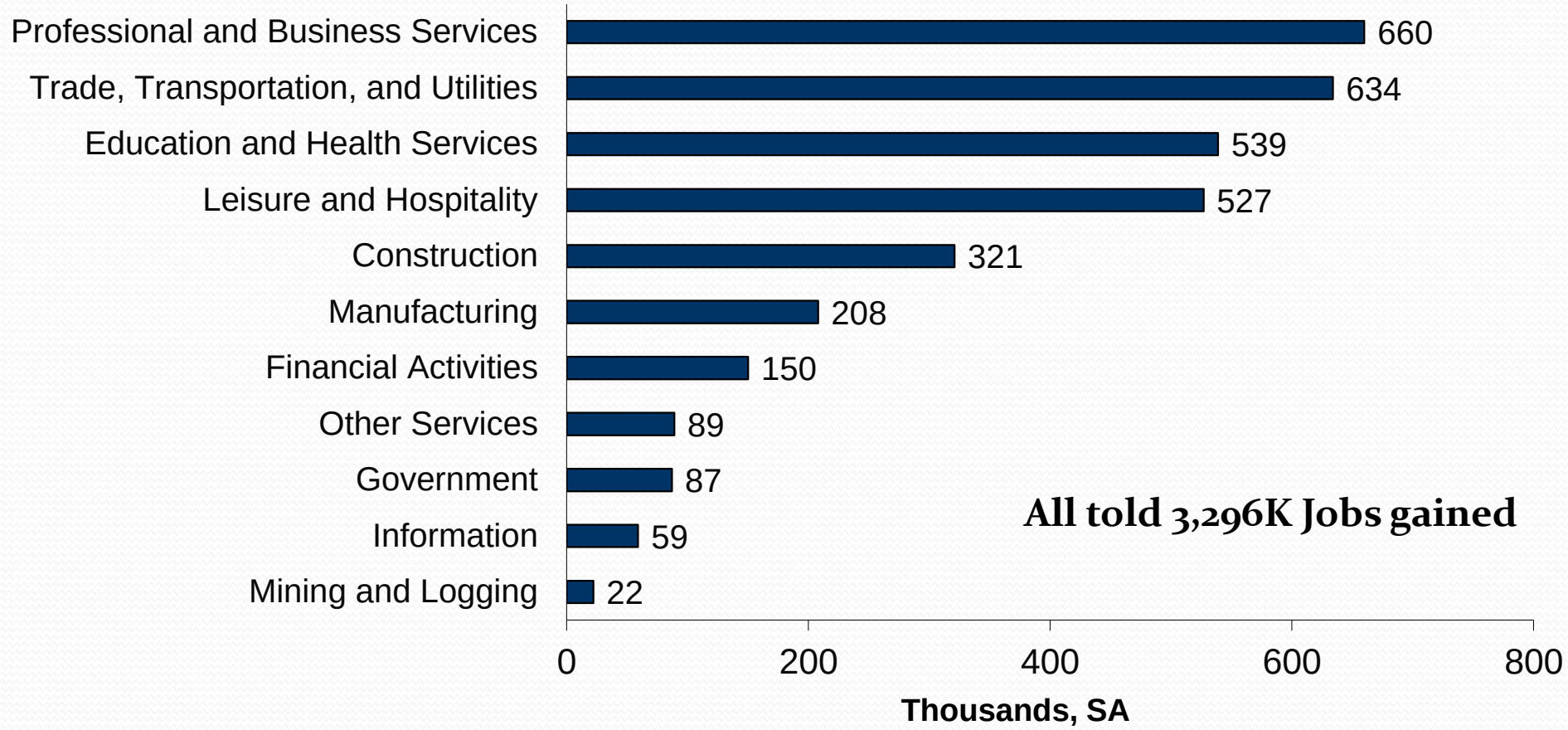
National Nonfarm Employment

by Industry Sector

February 2014 v. February 2015



Source: U.S. Bureau of Labor Statistics

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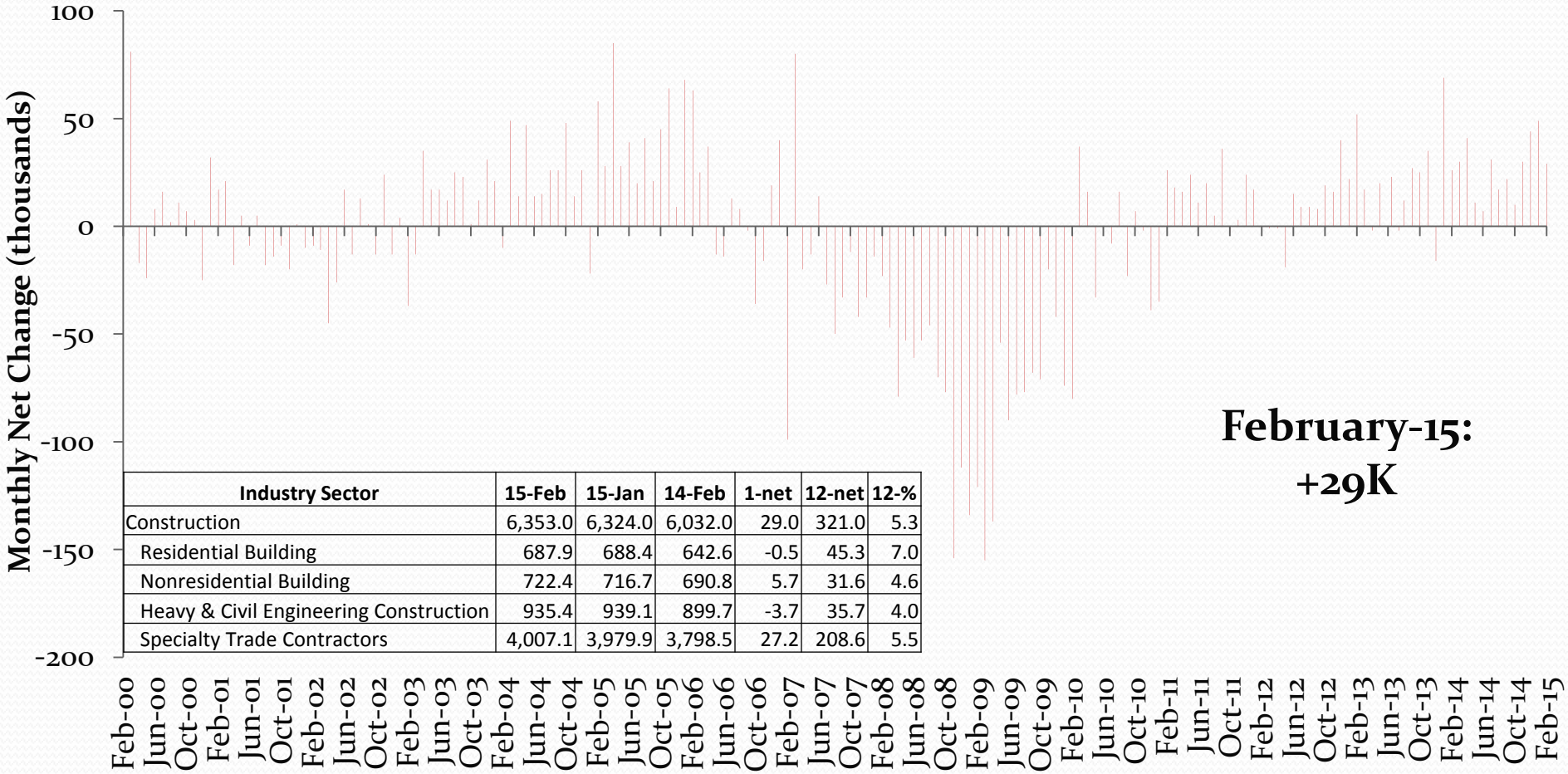
National Construction Employment

Monthly Net Change

February 2000 through February 2015



February-15: +29K

Industry Sector	15-Feb	15-Jan	14-Feb	1-net	12-net	12-%
Construction	6,353.0	6,324.0	6,032.0	29.0	321.0	5.3
Residential Building	687.9	688.4	642.6	-0.5	45.3	7.0
Nonresidential Building	722.4	716.7	690.8	5.7	31.6	4.6
Heavy & Civil Engineering Construction	935.4	939.1	899.7	-3.7	35.7	4.0
Specialty Trade Contractors	4,007.1	3,979.9	3,798.5	27.2	208.6	5.5

Source: U.S. Bureau of Labor Statistics

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State-by-state Growth in Construction Jobs

January 2014 v. January 2015

STATE	Year-over-year Ch. ('000)	STATE	Year-over-year Ch. ('000)	STATE	Year-over-year Ch. ('000)
TEXAS	49.6	KENTUCKY	4.6	MISSOURI	0.8
CALIFORNIA	37.8	IDAHO	4.4	NEW MEXICO	0.8
FLORIDA	31.8	NORTH DAKOTA	4.3	HAWAII*	0.8
WASHINGTON	17.3	MARYLAND*	4.0	MONTANA	0.7
NEW YORK	16.4	LOUISIANA	3.9	RHODE ISLAND	0.6
COLORADO	13.5	VIRGINIA	3.9	VERMONT	0.6
MICHIGAN	13.2	ARKANSAS	3.2	KANSAS	0.5
NEW JERSEY	12.3	ARIZONA	2.8	SOUTH DAKOTA*	0.5
NORTH CAROLINA	11.3	OREGON	2.8	DISTRICT OF COLUMBIA*	0.3
ILLINOIS	11.1	OHIO	2.7	WYOMING	0.2
WISCONSIN	9.3	GEORGIA	2.6	DELAWARE*	-0.1
UTAH	7.4	CONNECTICUT	2.3	NEBRASKA*	-0.2
IOWA	6.5	SOUTH CAROLINA	1.7	MAINE	-0.5
PENNSYLVANIA	5.7	OKLAHOMA	1.6	MINNESOTA	-0.7
TENNESSEE*	5.7	ALABAMA	1.3	WEST VIRGINIA	-0.7
NEVADA	5.4	NEW HAMPSHIRE	1.2	INDIANA	-1.9
MASSACHUSETTS	4.7	ALASKA	1.0	MISSISSIPPI	-6.6

Source: U.S. Bureau of Labor Statistics

*Construction, Mining, and Logging are included in one industry.

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Employment Growth, U.S. States (SA)

January 2014 v. January 2015 Percent Change

Rank	State	%	Rank	State	%	Rank	State	%
1	NORTH DAKOTA	4.3	18	INDIANA	2.2	35	KANSAS	1.3
2	UTAH	4.0	18	KENTUCKY	2.2	35	LOUISIANA	1.3
3	FLORIDA	3.6	20	MASSACHUSETTS	2.0	35	VERMONT	1.3
3	NEVADA	3.6	21	ALABAMA	1.8	38	ALASKA	1.2
5	TEXAS	3.5	21	NEW YORK	1.8	38	NEBRASKA	1.2
6	OREGON	3.3	21	OHIO	1.8	38	NEW JERSEY	1.2
6	WASHINGTON	3.3	24	DELAWARE	1.6	41	ILLINOIS	1.1
8	CALIFORNIA	3.2	24	DISTRICT OF COLUMBIA	1.6	41	PENNSYLVANIA	1.1
8	GEORGIA	3.2	24	IOWA	1.6	43	MINNESOTA	1.0
10	IDAHO	3.1	24	MISSOURI	1.6	44	MISSISSIPPI	0.8
11	COLORADO	2.9	24	NEW MEXICO	1.6	44	MONTANA	0.8
12	ARIZONA	2.7	24	WYOMING	1.6	46	HAWAII	0.7
12	SOUTH CAROLINA	2.7	30	CONNECTICUT	1.5	46	NEW HAMPSHIRE	0.7
14	NORTH CAROLINA	2.6	30	MARYLAND	1.5	46	SOUTH DAKOTA	0.7
14	TENNESSEE	2.6	30	OKLAHOMA	1.5	46	VIRGINIA	0.7
16	MICHIGAN	2.4	30	WISCONSIN	1.5	50	WEST VIRGINIA	0.4
17	ARKANSAS	2.3	34	RHODE ISLAND	1.4	51	MAINE	-0.1

Source: U.S. Bureau of Labor Statistics

U.S. Year-over-year Percent Change: 2.3%

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Unemployment Rates, U.S. States (SA)

January 2015

RANK	STATE	%	RANK	STATE	%	RANK	STATE	%
1	NORTH DAKOTA	2.8	18	DELAWARE	5.0	35	ILLINOIS	6.1
2	NEBRASKA	2.9	18	WISCONSIN	5.0	36	ALASKA	6.3
3	SOUTH DAKOTA	3.4	20	MASSACHUSETTS	5.1	36	CONNECTICUT	6.3
3	UTAH	3.4	20	OHIO	5.1	36	MICHIGAN	6.3
5	MINNESOTA	3.7	20	PENNSYLVANIA	5.1	36	NEW JERSEY	6.3
6	OKLAHOMA	3.9	23	MAINE	5.2	36	OREGON	6.3
7	NEW HAMPSHIRE	4.0	24	NORTH CAROLINA	5.4	41	GEORGIA	6.4
7	WYOMING	4.0	25	KENTUCKY	5.5	41	WASHINGTON	6.4
9	HAWAII	4.1	25	MARYLAND	5.5	43	RHODE ISLAND	6.5
9	IDAHO	4.1	25	MISSOURI	5.5	44	ARIZONA	6.6
9	VERMONT	4.1	28	ARKANSAS	5.6	44	SOUTH CAROLINA	6.6
12	COLORADO	4.2	29	FLORIDA	5.7	46	TENNESSEE	6.7
12	IOWA	4.2	30	NEW YORK	5.8	47	CALIFORNIA	6.9
12	KANSAS	4.2	31	NEW MEXICO	5.9	48	LOUISIANA	7.0
15	MONTANA	4.4	31	WEST VIRGINIA	5.9	49	MISSISSIPPI	7.1
15	TEXAS	4.4	33	ALABAMA	6.0	49	NEVADA	7.1
17	VIRGINIA	4.7	33	INDIANA	6.0	51	DISTRICT OF COLUMBIA	7.7

Source: U.S. Bureau of Labor Statistics

U.S. Unemployment Rate
January 2015: 5.7%
February 2015: 5.5%

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Unemployment Rates, 20 Largest Metros (NSA)

January 2015

Rank	MSA	UR
1	Minneapolis-St. Paul-Bloomington, MN-WI Metropolitan Statistical Area	4.1
2	Dallas-Fort Worth-Arlington, TX Metropolitan Statistical Area	4.4
3	Houston-The Woodlands-Sugar Land, TX Metropolitan Statistical Area	4.5
4	San Francisco-Oakland-Hayward, CA Metropolitan Statistical Area	4.8
5	Boston-Cambridge-Nashua, MA-NH Metropolitan NECTA	4.9
5	Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area	4.9
7	Miami-Fort Lauderdale-West Palm Beach, FL Metropolitan Statistical Area	5.5
7	Seattle-Tacoma-Bellevue, WA Metropolitan Statistical Area	5.5
9	Tampa-St. Petersburg-Clearwater, FL Metropolitan Statistical Area	5.7
10	Phoenix-Mesa-Scottsdale, AZ Metropolitan Statistical Area	5.8

Rank	MSA	UR
10	San Diego-Carlsbad, CA Metropolitan Statistical Area	5.8
12	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metropolitan Statistical Area	6.0
12	St. Louis, MO-IL Metropolitan Statistical Area1	6.0
14	Atlanta-Sandy Springs-Roswell, GA Metropolitan Statistical Area	6.2
14	Baltimore-Columbia-Towson, MD Metropolitan Statistical Area	6.2
16	New York-Newark-Jersey City, NY-NJ-PA Metropolitan Statistical Area	6.5
17	Chicago-Naperville-Elgin, IL-IN-WI Metropolitan Statistical Area	6.9
18	Riverside-San Bernardino-Ontario, CA Metropolitan Statistical Area	7.3
19	Detroit-Warren-Dearborn, MI Metropolitan Statistical Area	7.4
19	Los Angeles-Long Beach-Anaheim, CA Metropolitan Statistical Area	7.4

Source: U.S. Bureau of Labor Statistics

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Nightmare on Elm Street

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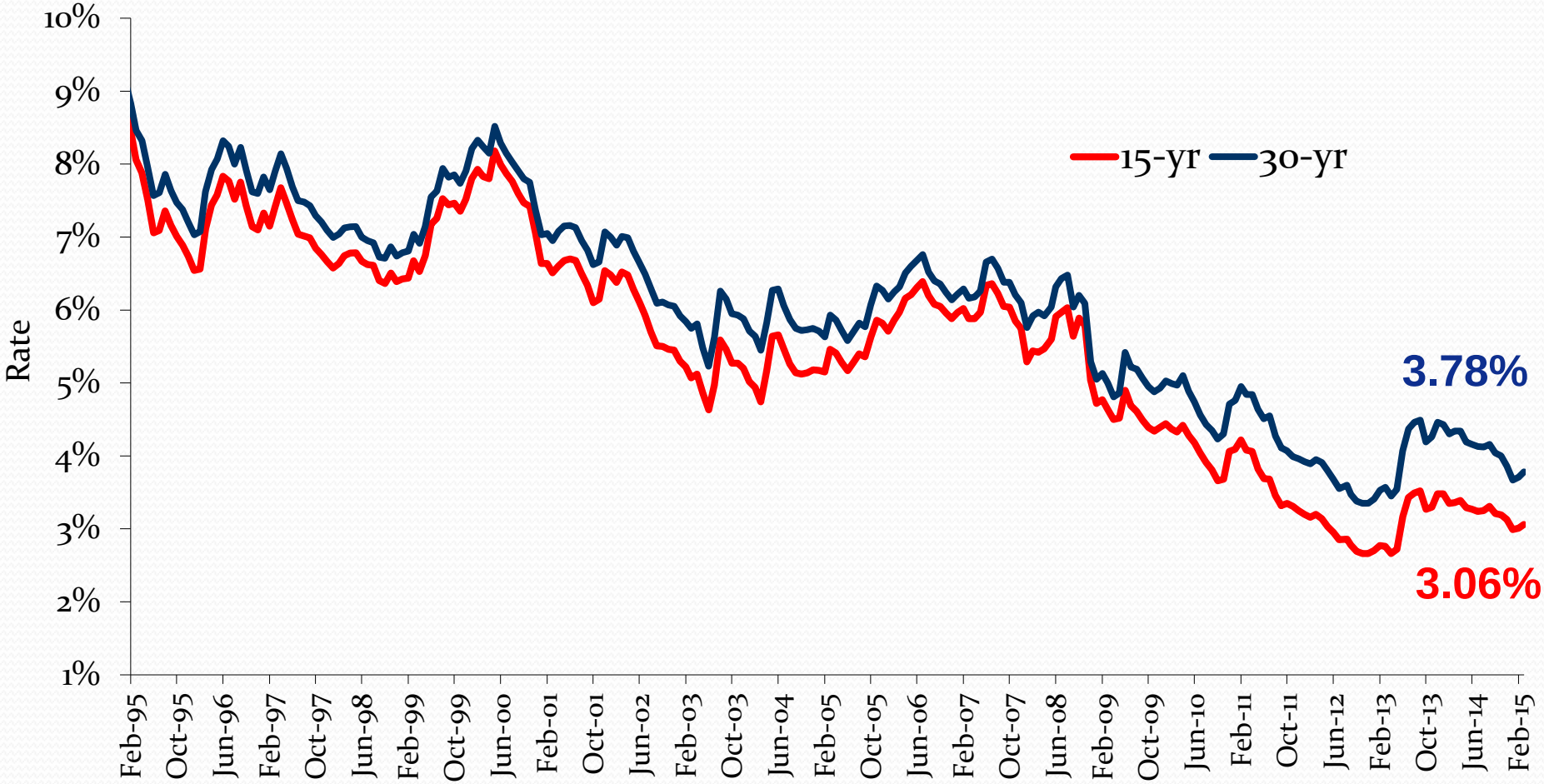
15-Year & 30-Year Fixed Mortgage Rates

*February 1995 through March 2015**



Source: Freddie Mac

*Week ending 3/19/2015

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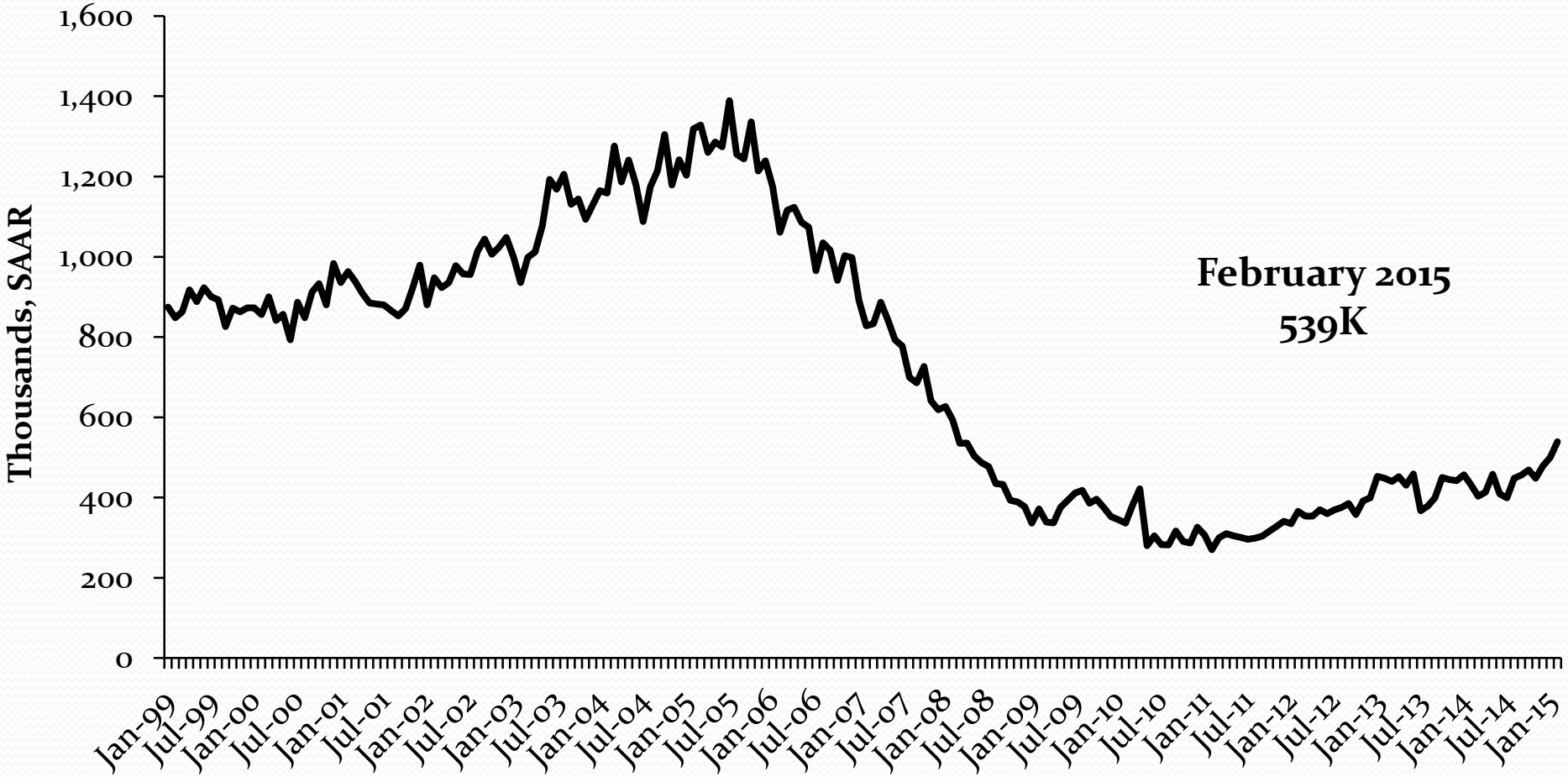
U.S. New Home Sales

January 1999 through February 2015



Source: U.S. Census Bureau

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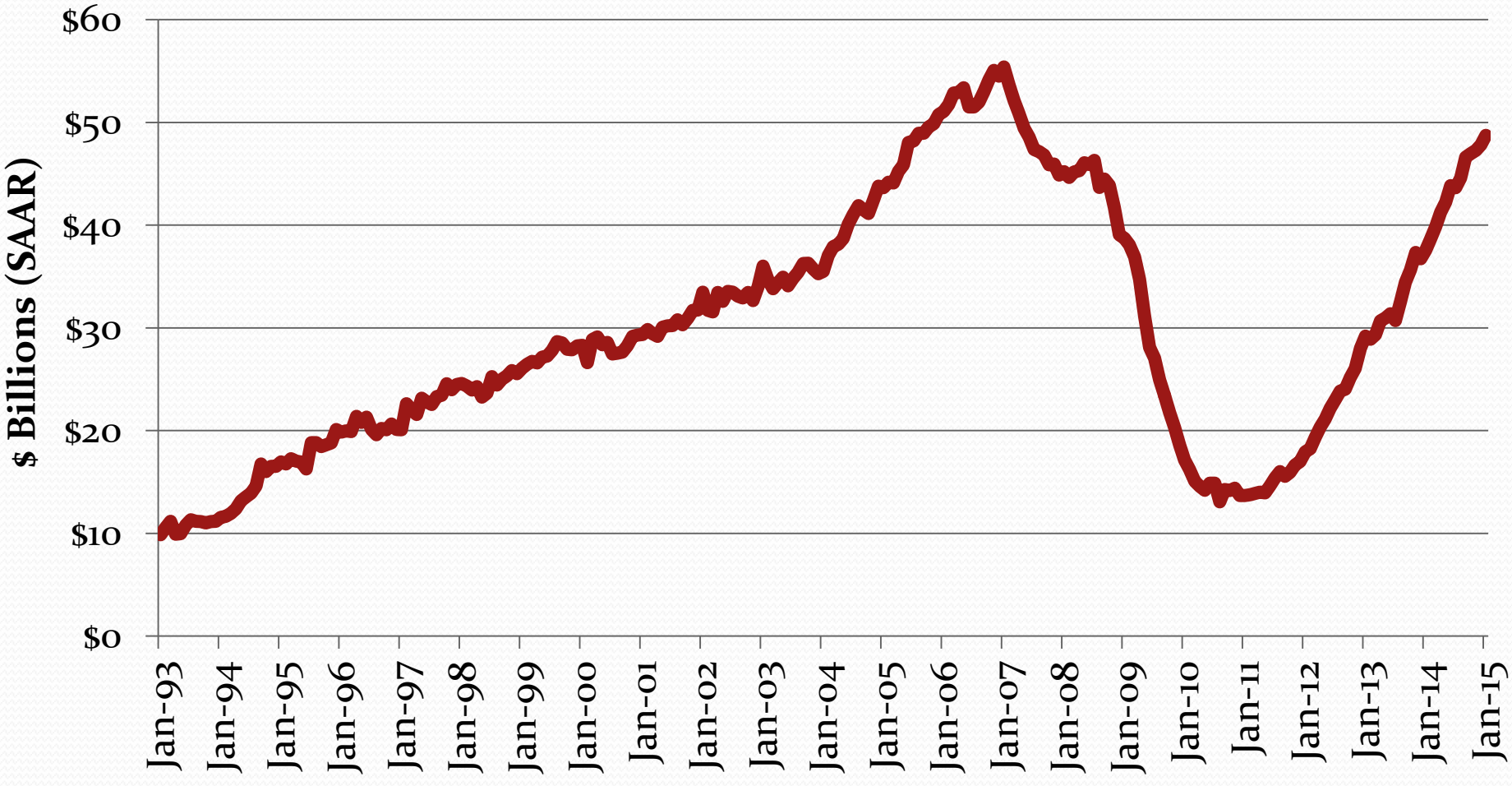
U.S. Private New Multifamily Construction

January 1993 through January 2015



Source: U.S. Census Bureau

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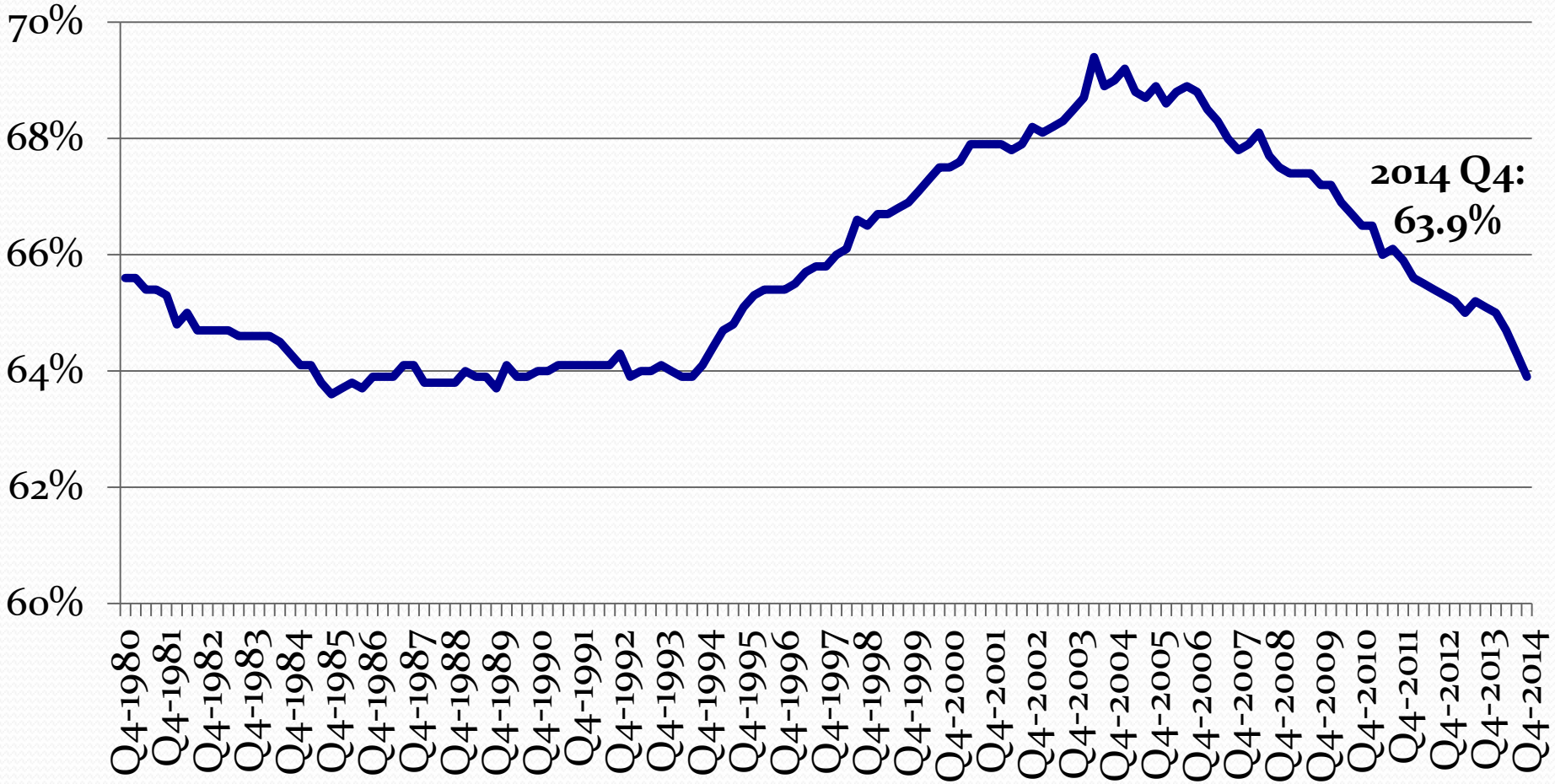
U.S. Homeownership



Source: U.S. Census Bureau

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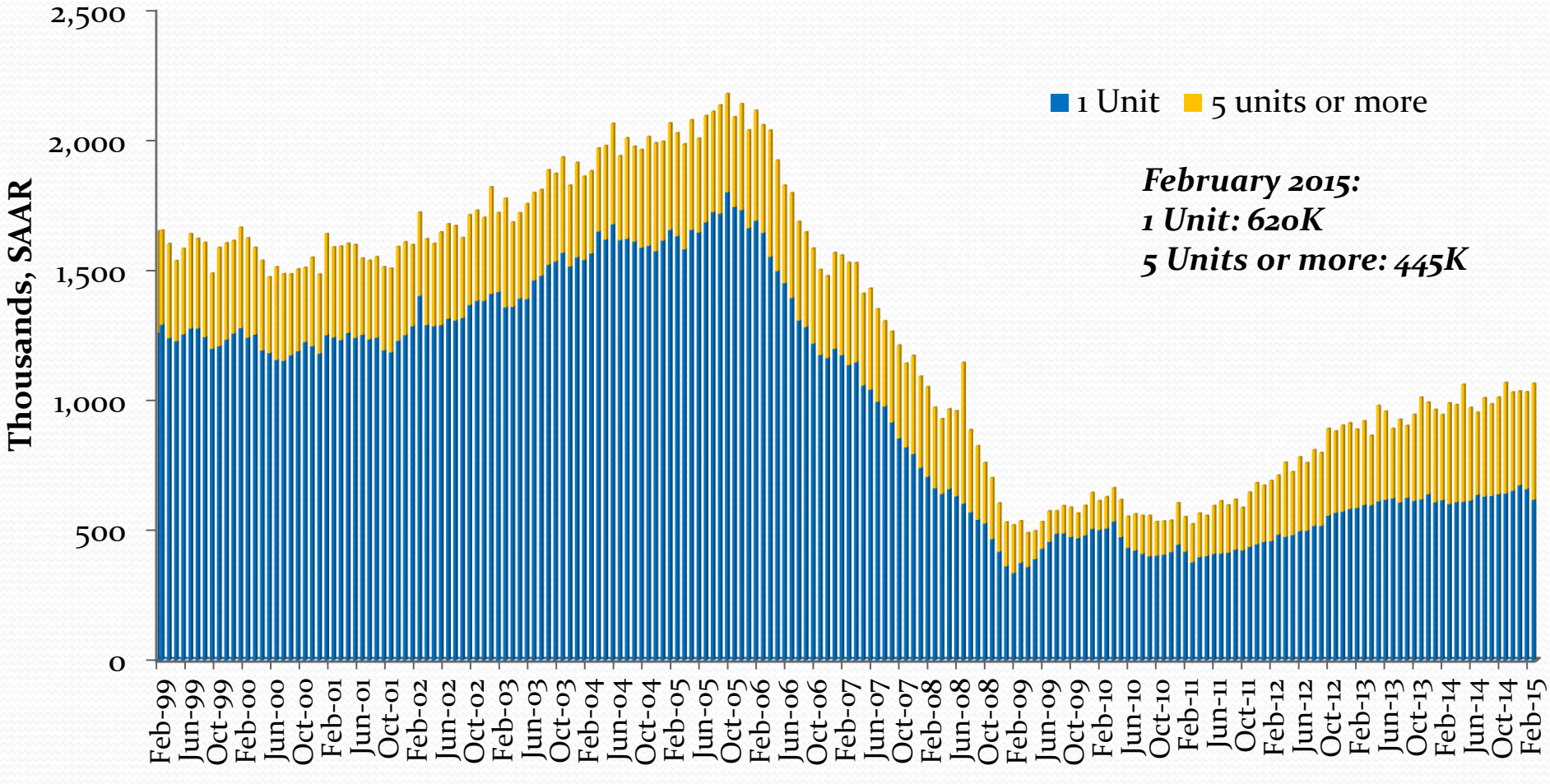
U.S. Housing Building Permits

February 1999 through February 2015



Source: U.S. Census Bureau

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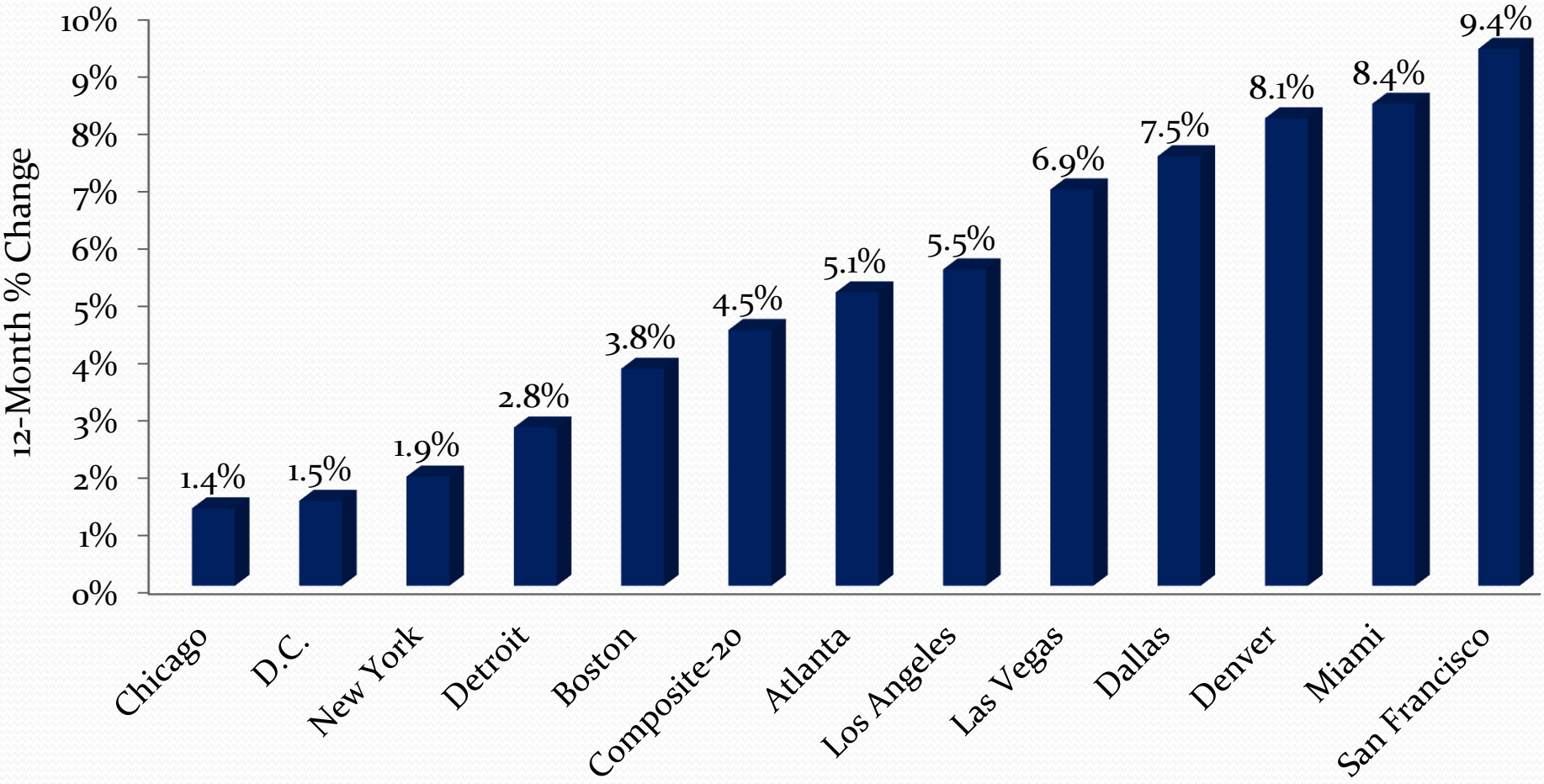
S&P/Case-Shiller Home Price Indices for Select Metros

December 2014, 12-Month Percentage Change



Source: Standard & Poor's

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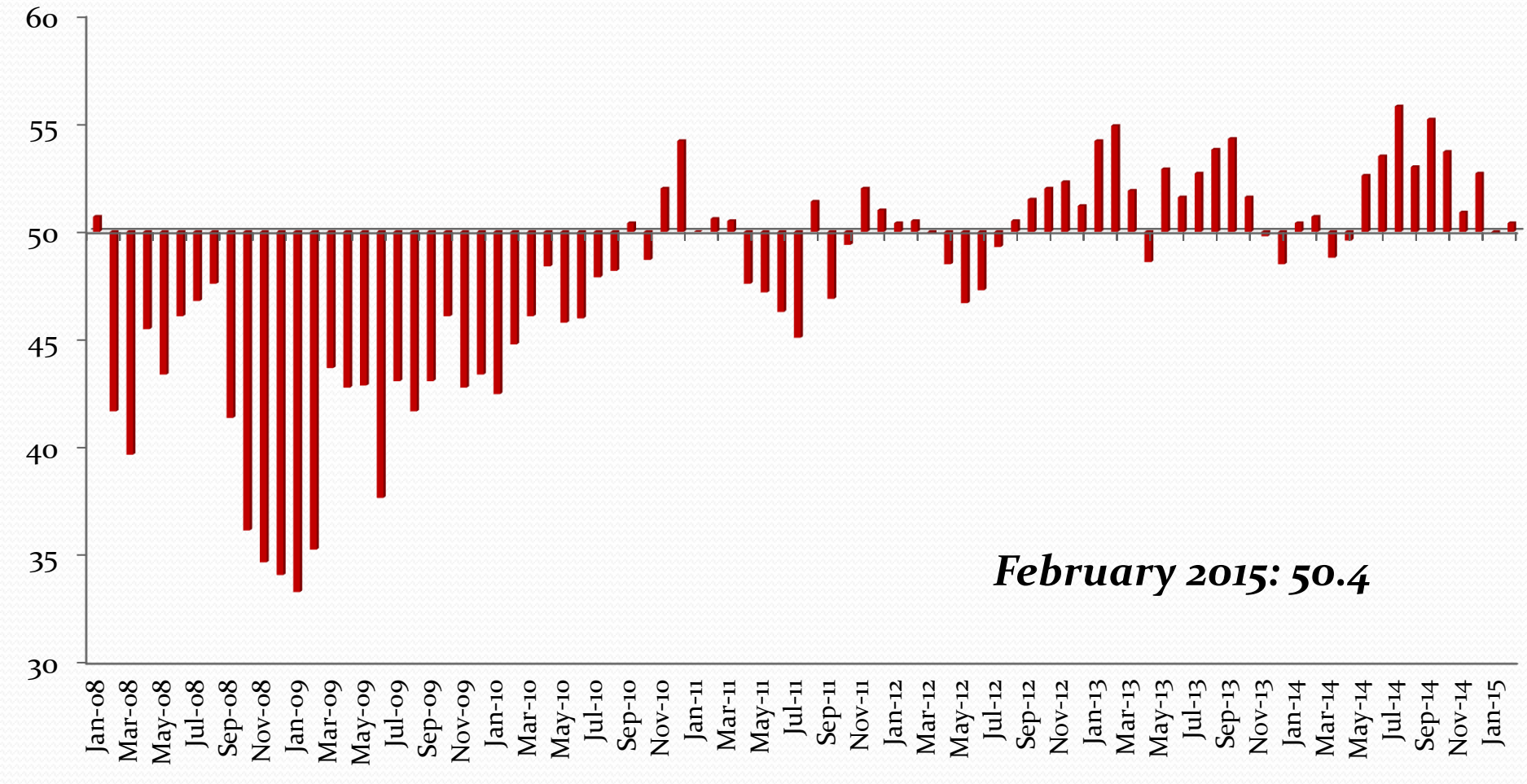
Architecture Billings Index

January 2008 through February 2015



Source: The American Institute of Architects

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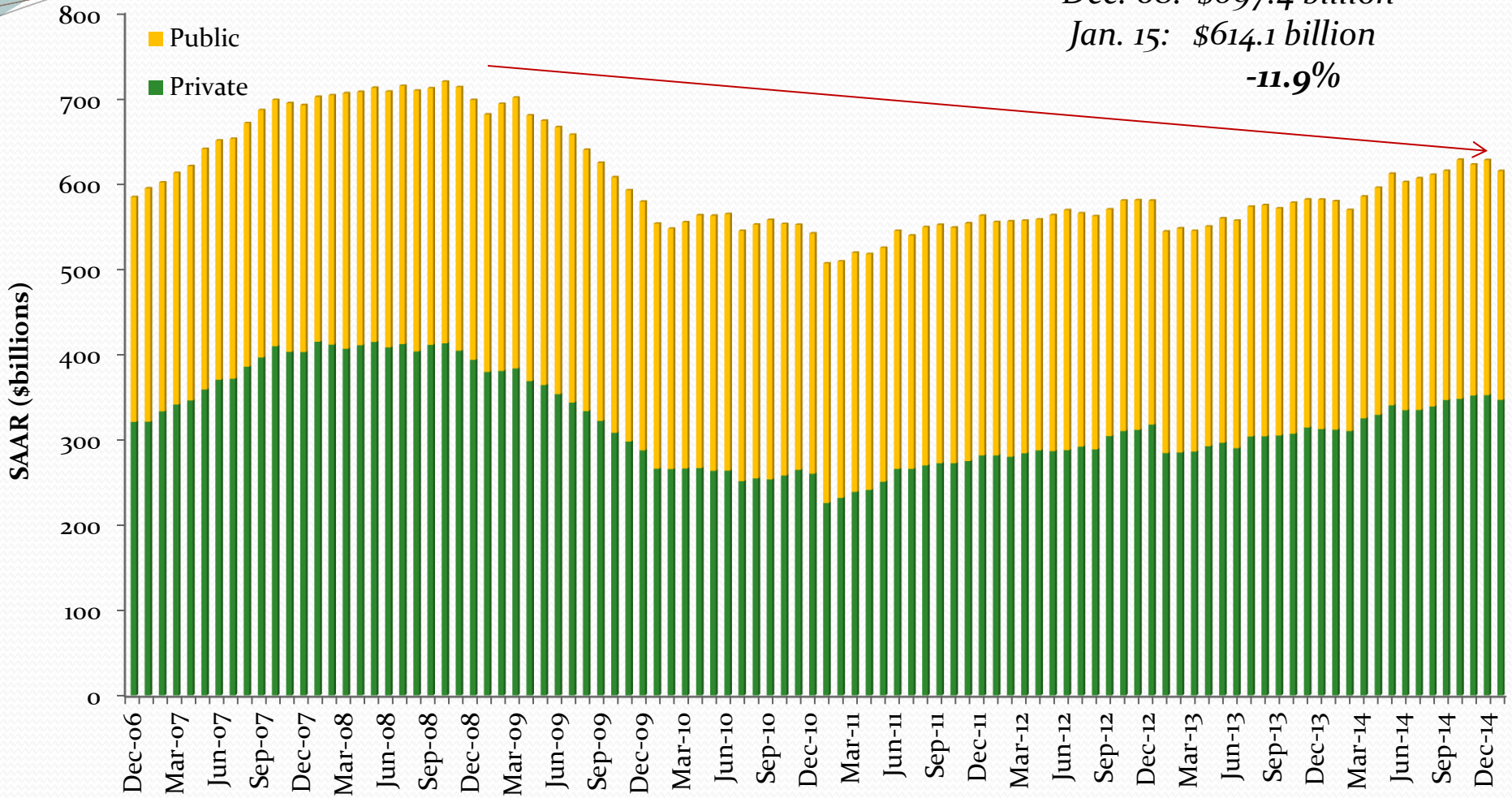
Nonresidential Construction Put-in-Place

December 2006 through January 15



Source: U.S. Census Bureau

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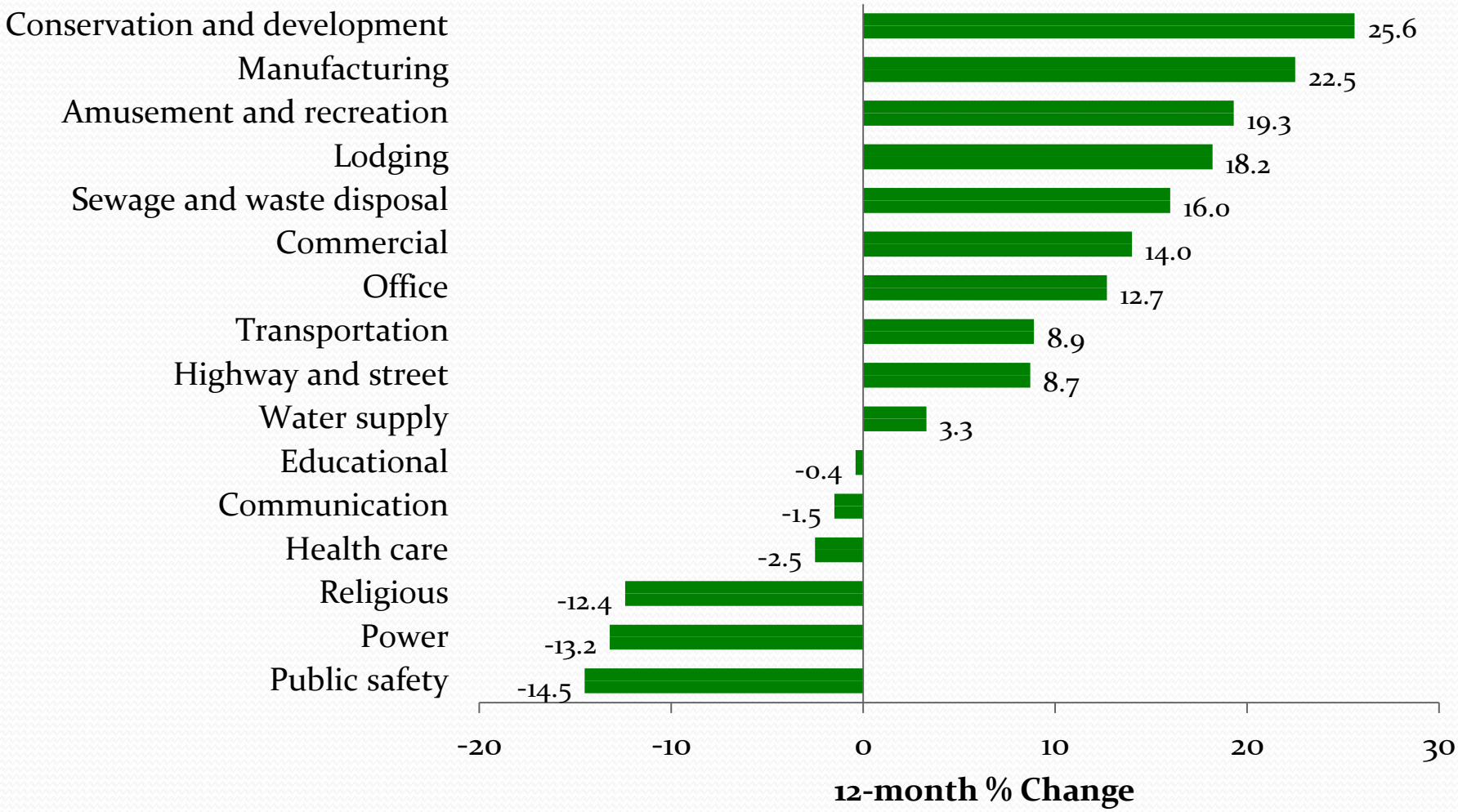
National Nonresidential Construction Spending by Subsector

January 2014 v. January 2015



Source: U.S. Census Bureau

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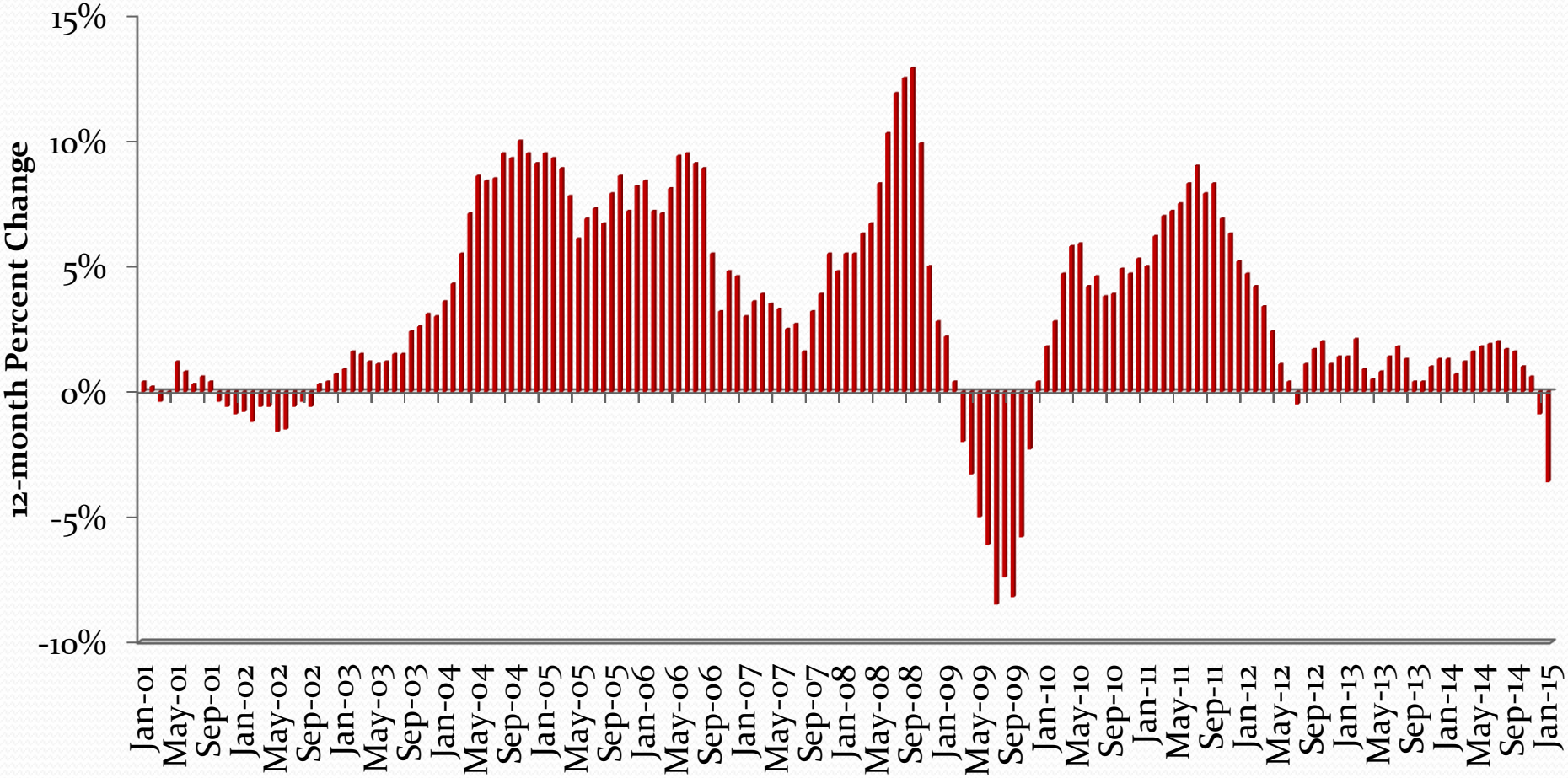
Inputs to Construction PPI

January 2001 – January 2015



Source: U.S. Bureau of Labor Statistics

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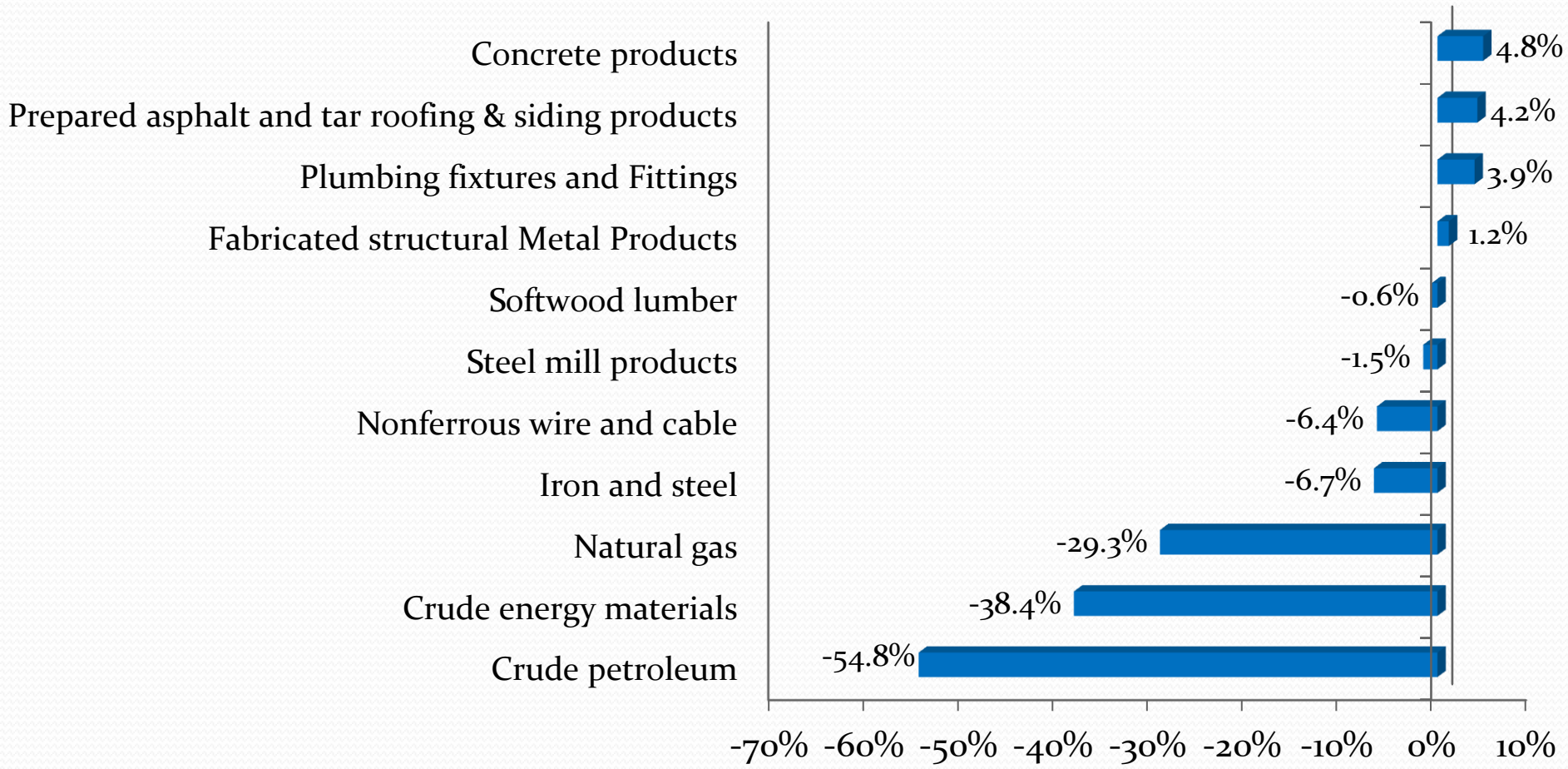
Construction Materials PPI

12-month % Change as of January 2015



Source: U.S. Bureau of Labor Statistics

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Megaprojects: High Risk of Failure

- IPA considered a project a failure if it met at least one of four criteria:
  - Its costs grew by 25 percent or more relative to expectation;
  - The schedule slipped by at least 25 percent (one year, on average, for mega-projects);
  - The project overspent compared to the industry average; or
  - There were severe and continuing operational problems lasting more than two years after startup.
- An ongoing, multiyear study conducted by Independent Project Analysis (IPA) Inc., with the participation of nearly 100 of the largest owners of global industrial project found a strong correlation between failure rate and size.
  - Around 37% of projects under $750 million fail. But megaprojects over $750 million tend to fail nearly two-thirds of the time (the study examined more than 3,700 projects).
- According to IPA's study, the engineering error rate has doubled since 2006. Merrow describes some of them as "Chemical Engineering 101-type errors."

Source: ENR, "Owners Take Rap for Big Project Fails" 02/26/2015 By Scott Blair

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Problems with Megaprojects

- Causes of Megaproject Inefficiency (1)
  - Inadequate planning and analysis prior to construction
  - Incomplete detail design engineering prior to construction
  - Lack of unified construction partnerships between owners and contractors
  - Ineffective project controls, which impact decision making and risk management throughout the project lifecycle.

Source: 1. Aconex.com "Managing Construction Megaprojects" May 2014;
2. PWC "Correcting the course of capital projects. Plan ahead to avoid time and cost overruns down the road" April 2013

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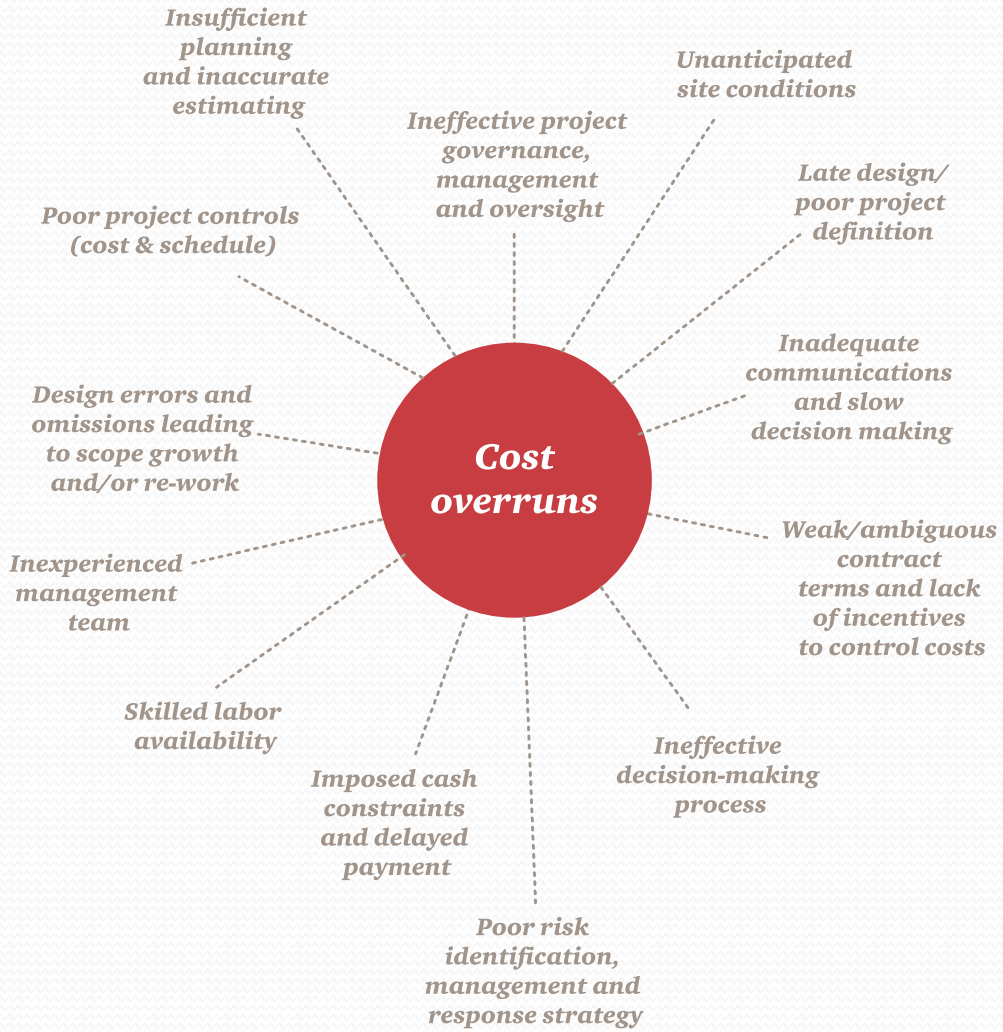
Megaprojects & Cost Overruns

The cost of projects gone awry

- "A PwC analysis of six nuclear plants found an average cost overrun of 157%.
- Of 47 mega-projects analyzed by PwC, the average cost overrun was 88%.
- For a refinery project budgeted at $4 billion, the final forecast was $12 billion.
- Incorrect contracting to build ships and infrastructure led to a $2 million tax loss.
- In litigation, a project owner sought €2.4 billion in damages for a three-year delay on a turnkey, €3 billion power project."



Source: PWC *"Correcting the course of capital projects. Plan ahead to avoid time and cost overruns down the road" April 2013*

Analysis of industry research conducted by PwC found that mega-projects often exceed their budgets by 50% or more.

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Psycho

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Sales Growth by Type of Business

*February 2014 v. February 2015**

Source: U.S. Census Bureau

*February 2015 advanced estimate

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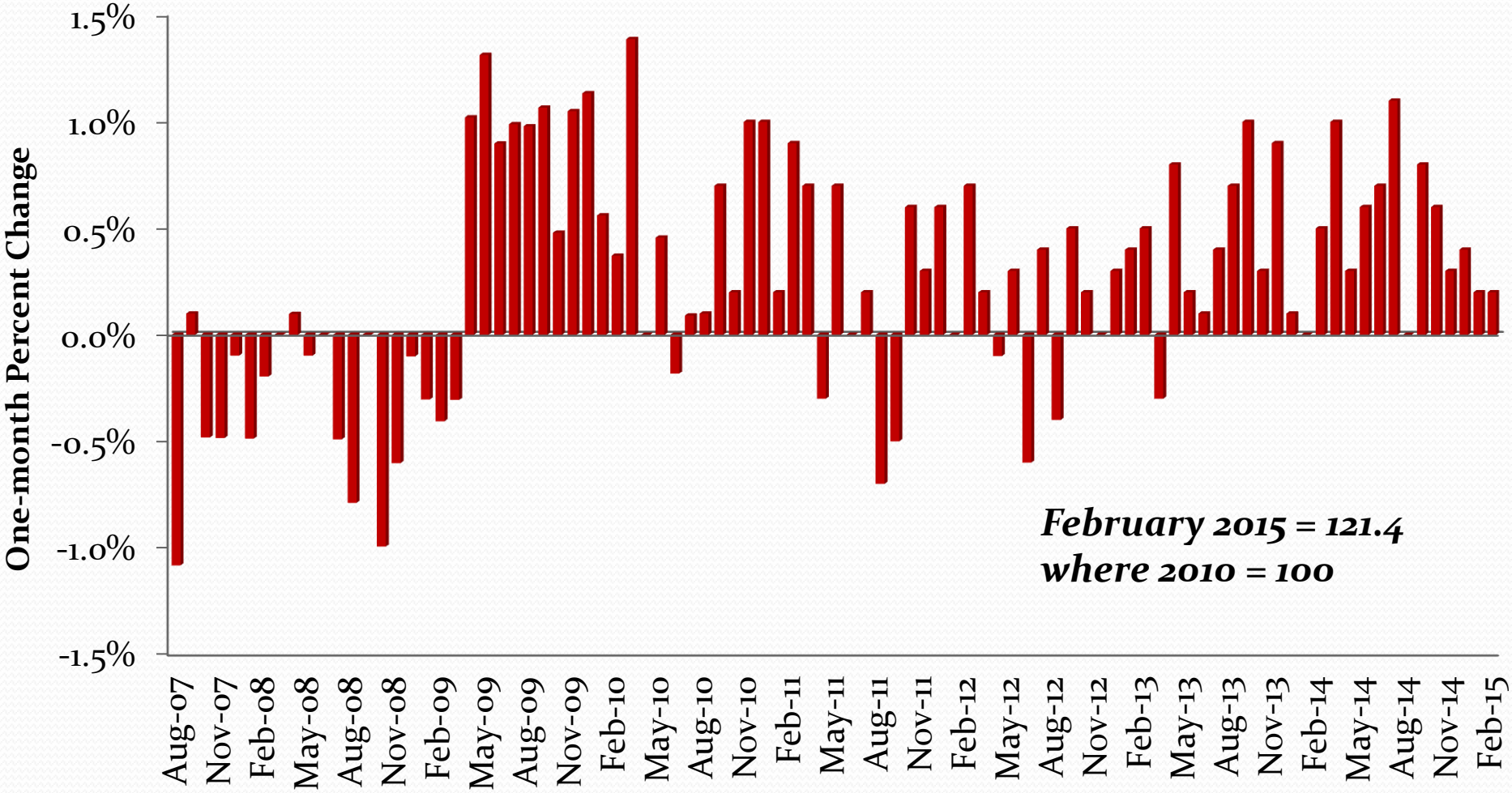
Conference Board Leading Economic Indicators Index

August 2007 through February 2015



Source: Conference Board

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Tell-Tale Heart

- Economy gained momentum over the course of last year;
- Tailwinds included booming stock market, lower gasoline prices, stabilizing global economy, and consumer expenditures on interest rate sensitive durable goods like autos;
- The current year is associated with greater certainty regarding monetary policy – that helps;
- The world is not perfect - black swan threats remain: (1) Iran (2) Israel/Iran (3) Europe (4) contagion (5) cyber (6) EMP;
- Market is nervous, but perhaps for the wrong reasons (there is at least one reason for anxiousness among equity investors); and
- More people benefit from lower oil prices than are hurt – more contractors and developers are helped than hurt – frankly, low oil prices just don't make me that nervous.

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Thank You

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